AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A stretchable electronic ~~apparatus~~ circuit, the ~~apparatus~~ circuit having a central longitudinal axis and the ~~apparatus~~ circuit being stretchable in a longitudinal direction generally aligned with the central longitudinal axis, comprising:

a solid stretchable polymer body made entirely of poly (dimethylsiloxane), said solid stretchable polymer body made entirely of poly (dimethylsiloxane) having a polymer body longitudinal axis that is concurrent with the central longitudinal axis of the ~~apparatus~~ circuit,

at least one microchannel in said solid stretchable polymer body made entirely of poly(dimethylsiloxane), said at least one microchannel having a microchannel longitudinal axis that is concurrent with the central longitudinal axis of the ~~apparatus~~ circuit, wherein said at least one microchannel extends fully along said microchannel longitudinal axis,

a ~~microchannel longitudinal component that extends~~ multiplicity of microchannel longitudinal components that extend in the longitudinal direction, and

a ~~microchannel offset component that is~~ multiplicity of micro channel offset components that are at an angle to the longitudinal direction, and

an electrically conductive media contained in said at least one microchannel,

wherein said at least one microchannel and said electrically conductive media form ~~at least one~~ an electronic circuit line that extends fully along said microchannel longitudinal axis and is operatively connected to said solid stretchable polymer body made entirely of poly (dimethylsiloxane), said at least one electronic circuit line extending in the longitudinal direction and having

a ~~circuit line longitudinal component that extends~~ multiplicity of circuit line longitudinal components that extend in the longitudinal direction, wherein said multiplicity of circuit line longitudinal components include said multiplicity of microchannel longitudinal components and having

a ~~circuit line offset component that is~~ multiplicity of circuit line offset components that extend at an angle to the longitudinal direction, wherein said multiplicity of circuit line offset components include said multiplicity of microchannel offset components,

said circuit line longitudinal component and said circuit line offset component allowing the ~~apparatus~~ circuit to stretch in the longitudinal direction while maintaining the integrity of said at least one circuit line.

2. (Withdrawn) The stretchable electronic apparatus of claim 1 wherein said at least one circuit line is S-shaped.

3. (Withdrawn) The stretchable electronic apparatus of claim 1 wherein said at least one circuit line is sawtooth shaped.

4. (Withdrawn) The stretchable electronic apparatus of claim 1 wherein said at least one circuit line is sawtooth shaped with the sawtooth having adjacent segments and said adjacent segments are at an angle of 45° to each other.

5. (Currently Amended) The stretchable electronic ~~apparatus~~ circuit of claim 1 wherein said at least one circuit line is sawtooth shaped with the sawtooth having rounded corners.

6. (Withdrawn) The stretchable electronic apparatus of claim 1 wherein said at least one circuit line is in the form of an S-shaped channel.

7. (Withdrawn) The stretchable electronic apparatus of claim 1 wherein said at least one circuit line is in the form of a serpentine channel.

8. (Withdrawn) The stretchable electronic apparatus of claim 1 wherein said at least one circuit line is in the form of a sawtooth.

9. (Withdrawn) The stretchable electronic apparatus of claim 1 wherein said stretchable polymer body is silicone.

10. (Currently Amended) The stretchable electronic ~~apparatus~~ circuit of claim 1 wherein said solid stretchable polymer body made entirely of poly (dimethylsiloxane) comprises cast poly (dimethylsiloxane).

11. (Currently Amended) The stretchable electronic ~~apparatus~~ circuit of claim 1 wherein said electrically conductive media comprises electrically conductive ink.

12. (Withdrawn) The stretchable electronic apparatus of claim 1 wherein said at least one circuit line comprises a conductive wire.

13. (Withdrawn) The stretchable electronic apparatus of claim 1 wherein said at least one circuit line comprises a conductive micron-scale wire.

14. (Withdrawn) The stretchable electronic apparatus of claim 1 wherein said at least one circuit line comprises a conductive metal paste.

15. (Withdrawn) The stretchable electronic apparatus of claim 1 wherein said at least one circuit line comprises a photolytic metal material.

16. (Withdrawn) The stretchable electronic apparatus of claim 1 wherein said at least one circuit line comprises a conductive polymer.

17. (Withdrawn) The stretchable electronic apparatus of claim 1 wherein said at least one circuit line comprises a fluidic circuit line.

18. (Currently Amended) The stretchable electronic ~~apparatus~~ circuit of claim 1 wherein said solid stretchable polymer body made entirely of poly (dimethylsiloxane) comprises a microcable made entirely of poly (dimethylsiloxane).

19. (Withdrawn) The stretchable electronic apparatus of claim 1 wherein said stretchable polymer body comprises an electronic device.

20. (Currently Amended) A stretchable electronic circuit, the circuit having a central longitudinal axis, comprising:

a solid stretchable and flexible polymer body made entirely of poly(dimethylsiloxane), said solid stretchable and flexible polymer body made entirely of poly(dimethylsiloxane) having a polymer body longitudinal axis that is concurrent with the central longitudinal axis of the circuit,

at least one microchannel in said solid stretchable polymer body made entirely of poly(dimethylsiloxane), said at least one microchannel having a microchannel longitudinal axis that is concurrent with the central longitudinal axis of the ~~apparatus~~ circuit, wherein said at least one microchannel extends fully along said microchannel longitudinal axis,

a ~~longitudinal component that extends~~ multiplicity of microchannel longitudinal components that extend in the longitudinal direction, and

~~an offset component that is~~ a multiplicity of micro channel offset components that are at an angle to the longitudinal direction, and

an electrically conductive media contained in said at least one microchannel,

wherein said at least one microchannel and said an electrically conductive media form ~~at least one~~ an electronic circuit line that extends fully along said microchannel longitudinal axis and is operatively connected to said flexible polymer substrate, said at least one electronic circuit line having

a ~~component that is~~ multiplicity of longitudinal components that are aligned with the central longitudinal axis of the circuit, wherein said multiplicity of longitudinal components include said multiplicity of microchannel longitudinal components, and

a multiplicity of offset components that are offset from the central longitudinal axis of the circuit, wherein said multiplicity of offset components include said multiplicity of microchannel offset components, and

wherein said longitudinal ~~component~~ components and said offset ~~component~~ components ~~allowing~~ allow the circuit to stretch in the longitudinal direction while maintaining the integrity of said at least one circuit line.

21. (Withdrawn) The stretchable electronic circuit of claim 20 wherein said at least one circuit line is S-shaped.

22. (Withdrawn) The stretchable electronic circuit of claim 20 wherein said at least one circuit line is sawtooth shaped.

23. (Withdrawn) The stretchable electronic circuit of claim 20 wherein said at least one circuit line is sawtooth shaped with the sawtooth having adjacent segments and said adjacent segments are at an angle of 45° to each other.

24. (Original) The stretchable electronic circuit of claim 20 wherein said at least one circuit line is sawtooth shaped with the sawtooth having rounded corners.

25. (Withdrawn) The stretchable electronic circuit of claim 20 wherein said at least one circuit line is in the form of an S-shaped channel.

26. (Withdrawn) The stretchable electronic circuit of claim 20 wherein said at least one circuit line is in the form of a serpentine channel.

27. (Withdrawn) The stretchable electronic circuit of claim 20 wherein said at least one circuit line is in the form of a sawtooth.

28. (Withdrawn) The stretchable electronic circuit of claim 20 wherein said flexible polymer substrate is silicone.

29. (Previously Presented) The stretchable electronic circuit of claim 20 wherein said solid flexible polymer body made entirely of poly (dimethylsiloxane) comprises cast poly (dimethylsiloxane).

30. (Previously Presented) The stretchable electronic circuit of claim 20 wherein said electrically conductive media comprises electrically conductive ink.

31. (Withdrawn) The stretchable electronic circuit of claim 20 wherein said at least one circuit line comprises a conductive wire.

32. (Withdrawn) The stretchable electronic circuit of claim 20 wherein said at least one circuit line comprises a conductive micron-scale wire.

33. (Withdrawn) The stretchable electronic circuit of claim 20 wherein said at least one circuit line comprises a conductive polymer.

34. (Withdrawn) The stretchable electronic circuit of claim 20 wherein said at least one circuit line comprises a fluidic circuit line.

35. (Currently Amended) A method of producing a stretchable electronic ~~device~~ circuit having a central longitudinal axis and being stretchable in a longitudinal direction generally aligned with the central longitudinal axis, comprising the steps of:

providing a solid stretchable polymer body made entirely of poly (dimethylsiloxane),

assuring that said solid stretchable polymer body made entirely of poly (dimethylsiloxane) has a polymer body longitudinal axis that is concurrent with the central longitudinal axis of the electronic ~~device~~ circuit;

providing at least one microchannel in said solid stretchable polymer body made entirely of poly(dimethylsiloxane) with said at least one microchannel having a microchannel longitudinal axis that is concurrent with the central longitudinal axis of the ~~device~~ circuit, wherein said at least one microchannel extends fully along said microchannel longitudinal axis,

a ~~longitudinal component that extends~~ multiplicity of microchannel longitudinal components that extend in the longitudinal direction, and

~~an offset component that is~~ a multiplicity of micro channel offset components that are at an angle to the longitudinal direction, and

filling said at least one microchannel with an electrically conductive media to assure that

said stretchable polymer body has a ~~circuit line longitudinal component that extends~~ multiplicity of circuit line longitudinal components that extend in the longitudinal direction, wherein said multiplicity of circuit line longitudinal components include said multiplicity of microchannel longitudinal components, and

said stretchable polymer body has a ~~circuit line offset component that is~~ multiplicity of circuit line offset components that extend at an angle to the longitudinal direction, wherein said multiplicity of circuit line offset components include said multiplicity of microchannel offset components,

said longitudinal component and said offset component allowing the ~~device~~ circuit to stretch in the longitudinal direction while maintaining the integrity of said circuit line longitudinal component and said circuit line offset component.

36. (Withdrawn) The method of claim 35 wherein said stretchable polymer body is silicone.

37. (Previously Presented) The method of claim 35 wherein said step of providing a solid stretchable polymer body made entirely of poly(dimethylsiloxane) comprises casting a solid stretchable polymer body made entirely of poly(dimethylsiloxane).

38. (Withdrawn) The method of claim 35 wherein said steps of applying to said stretchable polymer body a circuit line longitudinal component that extends in the longitudinal direction and applying to said stretchable polymer body a circuit line offset component that is at an angle to the longitudinal direction,

comprises producing three-dimensional microfluidic channels in said stretchable polymer body.

39. (Withdrawn) The method of claim 38 including the step of filling said three-dimensional microfluidic channels with a conductive material.

40. (Withdrawn) The method of claim 38 including the step of filling said three-dimensional microfluidic channels with a conductive metal.

41. (Withdrawn) The method of claim 38 including the step of filling said three-dimensional microfluidic channels with a conductive polymer.

42. (Withdrawn) The method of claim 38 including the step of filling said three-dimensional microfluidic channels with a fluid to form a fluidic circuit.

43. (Withdrawn) The method of claim 38 including the step of filling said three-dimensional microfluidic channels with conductive ink.

44. (Withdrawn) The method of claim 43 including the step of curing said conductive ink to produce embedded conducting networks within said stretchable polymer body.

45. (Withdrawn) The method of claim 44 wherein said step of filling said three-dimensional microfluidic channels with said conductive ink comprises injecting said conductive ink into said three-dimensional microfluidic channels.

46. (Withdrawn) The method of claim 45 wherein said step of filling said three-dimensional microfluidic channels with said conductive ink comprises injecting said conductive ink into said three-dimensional microfluidic channels using a syringe.

47. (Withdrawn) The method of claim 45 wherein said steps of filling said three-dimensional microfluidic channels with said conductive ink comprises using a vacuum to draw said conductive ink through said three-dimensional microfluidic channels.

48. (Withdrawn) The method of claim 35 wherein said steps of applying to said stretchable polymer body a circuit line longitudinal component that extends in the longitudinal direction and applying to said stretchable polymer body a circuit line offset component that is at an angle to the longitudinal direction, comprises using a stamp to place said conductive ink in a desired pattern on said stretchable polymer body.

49. (Withdrawn) The method of claim 35 wherein steps of applying to said stretchable polymer body a circuit line longitudinal component that extends in the longitudinal direction and applying to said stretchable polymer body a circuit line offset component that is at an angle to the longitudinal direction, comprises uses photolithography.

50. (Previously Presented) The method of claim 35 wherein said step of providing a solid stretchable polymer body comprises providing a solid micro cable made entirely of poly(dimethylsiloxane).

51. (Withdrawn) The method of claim 35 wherein said stretchable polymer body is an electronic device.